1,163,400

PATENT SPECIFICATION

DRAWINGS ATTACHED

1,163,400

Date of Application (No. 18853/68) and filing Complete Specification: 22 April, 1968.

Application made in Germany (No. M58652/47a Gbm) on 27 April, 1967.

Complete Specification Published: 4 Sept., 1969.

Index at acceptance:—E2 B(13D1A, 13D4B)

International Classification:—F 16 b 5/00

COMPLETE SPECIFICATION

Improvements in and relating to Stud and Socket Fastenings

We, FIRTH CLEVELAND FASTENINGS LIMITED, a British Company, of Treforest Industrial Estate, Pontypridd, Glamorganshire, South Wales, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to stud and socket fastenings.

According to the present invention there is provided stud and socket fastening of resilient material comprising a socket having a flange at one end thereof and a stud shaped to fit slidingly into the socket, and having a head thereon, the external surface of the stud and the internal surface of the socket having thereon cooperable projections and recesses which, if out of mutual engagement upon full insertion of the stud into the socket, cause expansion of the socket, but which can be moved into mutual engagement by rotation of the stud in its fully inserted position, thereby permitting contraction of the socket and withdrawal of the fastening.

The present invention also provides a stud and socket fastening of resilient material, for securing an apertured member to an apertured support, comprising a socket provided with a flange to limit its insertion into registering apertures of the said member and support, diametrically-opposed projections on the internal surface of the socket spaced from said flange, and a stud which can be forced into the socket to expand the socket, by engagement with said projections, the stud having a head formed with abutment surfaces for the reception of a tool for rotating the stud, the stud also having recesses therein located at a distance from the underside of the head equal to the distance between the projections of the socket and the upper surface of the flange, the recesses being shaped to receive the projections of the socket therein.

One embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which:—

Fig. 1 is a side elevation, part in section, of a stud and socket fastening according to the invention showing the stud before it is driven into the socket;

Fig. 2 is a view corresponding to that of Figure 1 but showing the stud rotated through 90° about its axis;

Fig. 3 is a view corresponding to that of Figure 1 but showing the stud having been driven into the socket; and

Fig. 4 is a view corresponding to that of Figure 3 but with the stud having been rotated through 90° about its axis.

As shown in the drawings, the fastening 1 comprises a cylindrical socket 2 having a flange 3 at one end. The internal surface of the socket adjacent its opposite end 4 is provided with two diametrically opposite rib-shaped projections 5 and 6 extending circumferentially, and two longitudinally extending slits 7 and 8 passing fully through the wall of the socket equidistantly and circumferentially spaced from, the two projections 5 and 6.

A stud 9, having a head 10, is formed in one piece with the socket but is connected thereto only by a thin frangible fillet 11 which connects the leading end of the stud to the entrance of the socket at the flanged end thereof. The shank of the stud is of generally cylindrical shape but has two diametrically opposite recesses 12 and 13 which correspond in shape to the shape of the projections 5 and 6 of the socket, the distance of the recesses 12 and 13 from the underside 10*a* of the head 10 being equal to the distance between the projections 5 and 6 and the upper face 3*a* of the flange 3. Furthermore the orientation of the stud 9 relative to the socket 2 is such that the recesses 12 and 13 are offset by 90° relative to the projections 5 and 6 of the socket. The upper face of the head 10 is provided with a diametral slit 14 for the reception of

[*Pric*

a screw-driver or alternatively the head can be square, hexagonal or of other polygonal shape for engagement by a spanner or the like.

As shown in Figure 3, in order to secure a member 15 to a support 16, apertures are formed in the member 15 and support 16 of a size matching the external diameter of the socket 2, and when these apertures have been brought into register, the socket is inserted until the flange rests against the member 15. A blow is then applied to the head 10 in a direction longitudinally of the stud and with a force sufficient to sever the fillet 11 and drive the stud into the socket until the head rests against the flange 3. As the stud moves slidingly through the socket, its leading end engages the projections 5 and 6 and forces them outwardly thus expanding the socket. This is facilitated by the slits 7 and 8 in the wall of the socket. The expansion of the socket thus secures the member 15 to the support 16.

If however the member 15 is to be detached from the support 16, the stud 9 is rotated through 90° by a screwdriver or spanner applied to the head 10, so that the recesses 12 and 13 of the pin 9 are brought into register with the projections 5 and 6 on the socket, and the socket is then free to contract sufficiently to permit withdrawal of the fastening from the registering apertures in the member 15 and support 16. Moreover, after withdrawal of the fastening, the stud can be pushed out of the socket to enable the fastening to be used again.

Although obviously it is preferable that the projections should be formed in the socket, and the recesses in the pin, the recesses could alternatively be formed in the socket and the projections on the stud providing that the stud or the socket is so formed as to permit the passage of the projections along the socket.

The fastening can be manufactured of nylon or other tough plastics material.

WHAT WE CLAIM IS:—

1. A stud and socket fastening of resilient material comprising a socket having a flange at one end thereof and a stud shaped to fit slidingly into the socket, and having a head thereon, the external surface of the stud and the internal surface of the socket having thereon cooperable projections and recesses which, if out of mutual engagement upon full insertion of the stud into the socket, causes expansion of the socket, but which can be moved into mutual engagement by rotation of the stud in its fully inserted position, thereby permitting contraction of the stud and withdrawal of the fastening.

2. A fastening according to claim 1 wherein the projections are formed on the socket and the recesses are formed in the stud.

3. A stud and socket fastening of resilient material, for securing an apertured member to an apertured support, comprising a socket provided with a flange to limit its insertion into registering apertures of the said member and support, diametrically-opposed projections on the internal surface of the socket spaced from said flange, and a stud which can be forced into the socket to expand the socket, by engagement with said projections, the stud having a head formed with abutment surfaces for the reception of a tool for rotating the stud, the stud also having recesses therein located at a distance from the underside of the head equal to the distance between the projections of the socket and the upper surface of the flange, the recesses being shaped to receive the projections of the socket therein.

4. A fastening according to claim 2 or claim 3 wherein the projections extend circumferentially and are rib shaped.

5. A fastening according to claim 2, claim 3 or claim 4 wherein the socket is formed with longitudinal slits circumferentially spaced from said projections.

6. A fastening according to any preceding claim wherein the head of the stud has a diametral slit therein for the reception of a screw driver or is of polygonal shape for engagement by a spanner.

7. A fastening according to any preceding claim wherein the leading end of the stud is secured to the socket by a frangible fillet.

8. A stud and socket fastening substantially as herein described with reference to the accompanying drawings.

MATHISEN & MACARA,
Chartered Patent Agents,
Lyon House, Lyon Road,
Harrow, Middlesex.
Agents for the Applicants.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1969.
Published by the Patent Office, 25 Southampton Buildings, London, W.C.2, from which copies may be obtained.

1163400 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

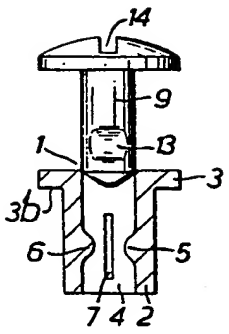

FIG. 1.

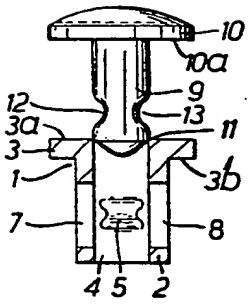

FIG. 2.

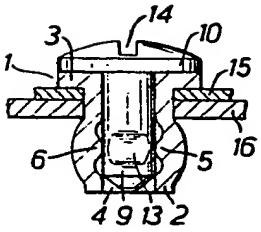

FIG. 3.

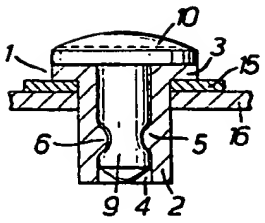

FIG. 4.